

What is claimed is:

1. A touch sensor comprising:
 - a sensor substrate covering a touch sensitive area, the touch sensitive area configured to receive a touch input applied to the touch sensitive area from a front side of the touch sensor;
 - a sensing electrode disposed on the sensor substrate in the touch sensitive area;
 - a self-supporting dielectric substrate covering a border area, the border area being outside the touch sensitive area, the dielectric substrate being disposed between the sensing electrode and the front side of the touch sensor; and
 - a plurality of auxiliary electrodes disposed on the self-supporting dielectric substrate in the border area, the touch sensor generating a touch signal in the sensing electrode in response to the touch input applied to the touch sensitive area from the front side of the touch sensor, the auxiliary electrodes transmitting the touch signal to electronics configured to use the touch signal to determine the touch location.
2. The touch sensor of claim 1, wherein a portion of the plurality of auxiliary electrodes is disposed on a first side of the self-supporting dielectric substrate and another portion of the auxiliary electrodes is disposed on a second side of the self-supporting dielectric substrate.
3. The touch sensor of claim 1, further comprising a field linearization pattern disposed along the perimeter of the touch sensitive area.
4. The touch sensor of claim 1, further comprising a cover layer disposed on the self-supporting dielectric substrate.
- 30 5. The touch sensor of claim 4, wherein the cover layer comprises glass.

6. The touch sensor of claim 4, wherein the cover layer is self-supporting.

7. The touch sensor of claim 4, wherein the cover layer is flexible.

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8. The touch sensor of claim 4, wherein the cover layer is rigid.

9. The touch sensor of claim 1, wherein the self-supporting dielectric substrate comprises glass.

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10. The touch sensor of claim 1, wherein the self-supporting dielectric substrate is flexible.

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11. The touch sensor of claim 1, wherein the self-supporting dielectric substrate comprises one or more apertures.

12. The touch sensor of claim 11, wherein the one or more apertures extend across the touch sensitive area.

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13. The touch sensor of claim 11, wherein the one or more apertures are covered by the touch sensitive area.

14. The touch sensor of claim 1, wherein the sensing electrode comprises a metal oxide.

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15. The touch sensor of claim 14, wherein the metal oxide comprises Indium Tin Oxide.

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16. The touch sensor of claim 14, wherein the metal oxide comprises Tin Antimony Oxide.

17. The touch sensor of claim 14, wherein the metal oxide comprises fluorine doped tin oxide.

5 18. The touch sensor of claim 1, wherein the sensing electrode comprises an organic conductor.

19. The touch sensor of claim 18, wherein the organic conductor comprises a conductive polymer.

10 20. A touch sensor system comprising a display viewable through the touch sensor of claim 1.

21. The touch sensor of claim 1 configured to be a capacitive touch sensor.

15 22. The touch sensor of claim 1, further comprising an electrically insulating layer disposed on the auxiliary electrodes.

23. The touch sensor of claim 22, further comprising an electrically conductive layer disposed on the electrically insulating layer.

20 24. The touch sensor of claim 23, wherein the electrically conductive layer is electrically isolated from the auxiliary electrodes.

25 25. The touch sensor of claim 1, wherein one or more of the plurality of auxiliary electrodes are electrically connected to the sensing electrode.

26. The touch sensor of claim 1, further comprising an electrically conductive shielding electrode disposed on the sensor substrate and opposite the sensing electrode.

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27. The touch sensor of claim 26, wherein one or more of the plurality of auxiliary electrodes are electrically connected to the electrically conductive shielding electrode.

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28. The touch sensor of claim 1, wherein the self-supporting dielectric substrate has one or more protruding sections.

10 29. The touch sensor of claim 28, wherein the one or more protruding sections electrically connect one or more of the plurality of auxiliary electrodes to the electronics.

15 30. The touch sensor of claims 26 and 28, wherein the one or more protruding sections electrically connect one or more of the plurality of auxiliary electrodes to the electrically conductive shielding electrode.

31. A capacitive touch sensor comprising:
a sensor substrate covering a touch sensitive area, the touch sensitive area configured to receive a touch input applied to the touch sensitive area;
20 a sensing electrode disposed on the sensor substrate in the touch sensitive area;
a self-supporting dielectric substrate covering a border area, the border area being outside the touch sensitive area; and
a plurality of auxiliary electrodes disposed on the dielectric substrate in
25 the border area, the touch sensor generating a touch signal in response to a capacitive coupling between the touch sensor and the touch input applied to the touch sensitive area, the auxiliary electrodes transmitting the touch signal to electronics configured to use the touch signal to determine the touch location.

32. The capacitive touch sensor of claim 31, wherein the self-supporting dielectric substrate comprises one or more apertures.

33. The capacitive touch sensor of claim 32, wherein the one or more apertures extend across the touch sensitive area.

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34. The capacitive touch sensor of claim 32, wherein the one or more apertures are covered by the touch sensitive area.

10 35. The capacitive touch sensor of claim 31, further comprising an electrically insulating layer disposed on the auxiliary electrodes.

36. The capacitive touch sensor of claim 35, further comprising an electrically conductive layer disposed on the electrically insulating layer.

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37. The touch sensor of claim 36, wherein the electrically conductive layer is electrically isolated from the auxiliary electrodes.